

REMARKS

Entry of the foregoing, re-examination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.116 and in light of the remarks which follow, are respectfully requested.

At the outset, Applicants thank Examiner Eldred of the U.S. Patent and Trademark Office for his time and consideration in participating in an Interview conducted on November 6, 2001. At the conclusion of the Interview, it was agreed that amending the claims to recite that a nitrogen-enriched air stream is introduced "directly into the fuel in the fuel tank" would overcome the prior art rejections of record (See Examiner Interview Summary Record, Paper No. 32).

By the above amendments, the specification has been amended to include a description of the drawings filed herewith. Claims 1, 5, 14 and 16 have been amended to recite that a nitrogen-enriched air stream is introduced "directly into the fuel in said fuel tank." Claim 25 has been amended to recite "a third conduit for introducing at least one of said first retentate stream and said second retentate stream directly into the fuel in said fuel tank." Support for these amendments can be found in the specification at least at page 9, lines 15 and 16. Claim 25 has also been amended for readability by replacing "first membrane modules" and "second membrane modules" with "one or more first membrane modules" and "one or more second membrane modules," respectively.

New claim 31 is directed to a system for inerting an aircraft fuel tank wherein a first and/or second conduit is connected to introduce a first and/or second retentate stream, respectively, directly into the fuel in the fuel tank. Support for new claim 31 can be found

in the specification at least from page 3, line 16 to page 4, line 7, taken in connection with page 9, lines 15-18.

In the Official Action, the Examiner has required that Applicants provide drawings which show the claimed subject matter (Official Action at page 1). While Applicants disagree with the propriety of this requirement, in order to expedite prosecution of the present application, Applicants submit herewith drawings of exemplary systems for inerting an aircraft fuel tank. Applicants submit that the drawings do not contain any new matter.

Claims 1-3, 5-14, 16-25 and 27-30 stand rejected under 35 U.S.C. §103(a) as being obvious over *Edwards et al* (U.S. Patent No. 5,013,331) in view of *Dornheim* ("Airline Industry Takes Fresh Look At Inerting," Aviation Week and Space Technology, McGraw-Hill, Inc., Vol. 147, No. 2, pp. 60-61 (1997)). This rejection should be withdrawn for at least the following reasons.

According to one aspect of the present invention as defined by claim 1, a method is provided for inerting an aircraft fuel tank. The method comprising the steps of (a) contacting compressed air with one or more first membrane modules at conditions effective to produce a first nitrogen-enriched air stream; (b) introducing said first nitrogen-enriched air stream into said fuel tank during periods of low demand for nitrogen-enriched air; (c) contacting compressed air with one or more second membrane modules at conditions effective to produce a second nitrogen-enriched air stream; and (d) introducing said second nitrogen-enriched air stream into said fuel tank during periods of high demand for nitrogen-enriched air. The first membrane modules have a lower O₂ permeance and a higher O₂/N₂ selectivity than said second membrane modules. At least one of said first nitrogen-enriched

air stream and said second nitrogen-enriched air stream is introduced directly into the fuel in said fuel tank at conditions effective to liberate at least a portion of dissolved O₂ in the fuel.

Edwards et al discloses a permeable membrane apparatus having one or more hollow-fiber bundles enclosed in a single housing. The apparatus is designed to provide selectable flow rates. The apparatus can be used in an aircraft fuel tank inerting system.

Edwards et al does not disclose or suggest each feature of the presently claimed invention. For example, *Edwards et al* does not disclose or suggest a method for inerting an aircraft fuel tank, wherein at least one of a first nitrogen-enriched air stream and a second nitrogen-enriched air stream is introduced directly into a fuel in a fuel tank at conditions effective to liberate at least a portion of dissolved O₂ in the fuel, as recited in claims 1 and 14. In this regard, the recited phrase "introduced directly into the fuel" includes, for example, bubbling or otherwise directly contacting the fuel with the nitrogen-enriched air stream (specification at page 9, lines 15-17). In stark contrast with the present invention, *Edwards et al* discloses introducing the flow of NEA "to the space over the fuel in [the] fuel tanks" (*Edwards* at col. 11, lines 4-5) (emphasis added). Therefore, *Edwards et al* clearly fails to disclose or suggest each of the features of the presently claimed invention.

Dornheim does not cure the above-described deficiency of *Edwards et al*. Like *Edwards et al*, *Dornheim* does not disclose or suggest introducing at least one of the first nitrogen-enriched air stream and the second nitrogen-enriched air stream directly into the fuel in the fuel tank at conditions effective to liberate at least a portion of dissolved O₂ in

the fuel. Thus, even if the references could properly be combined, their combination would still not have led one skilled in the art to arrive at the claimed invention.

Accordingly, for at least the reasons set forth above, withdrawal of the §103(a) rejection is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If the Examiner has any questions concerning this paper, or the application in general, the Examiner is invited to telephone the undersigned at the number listed below.

Respectfully submitted,

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